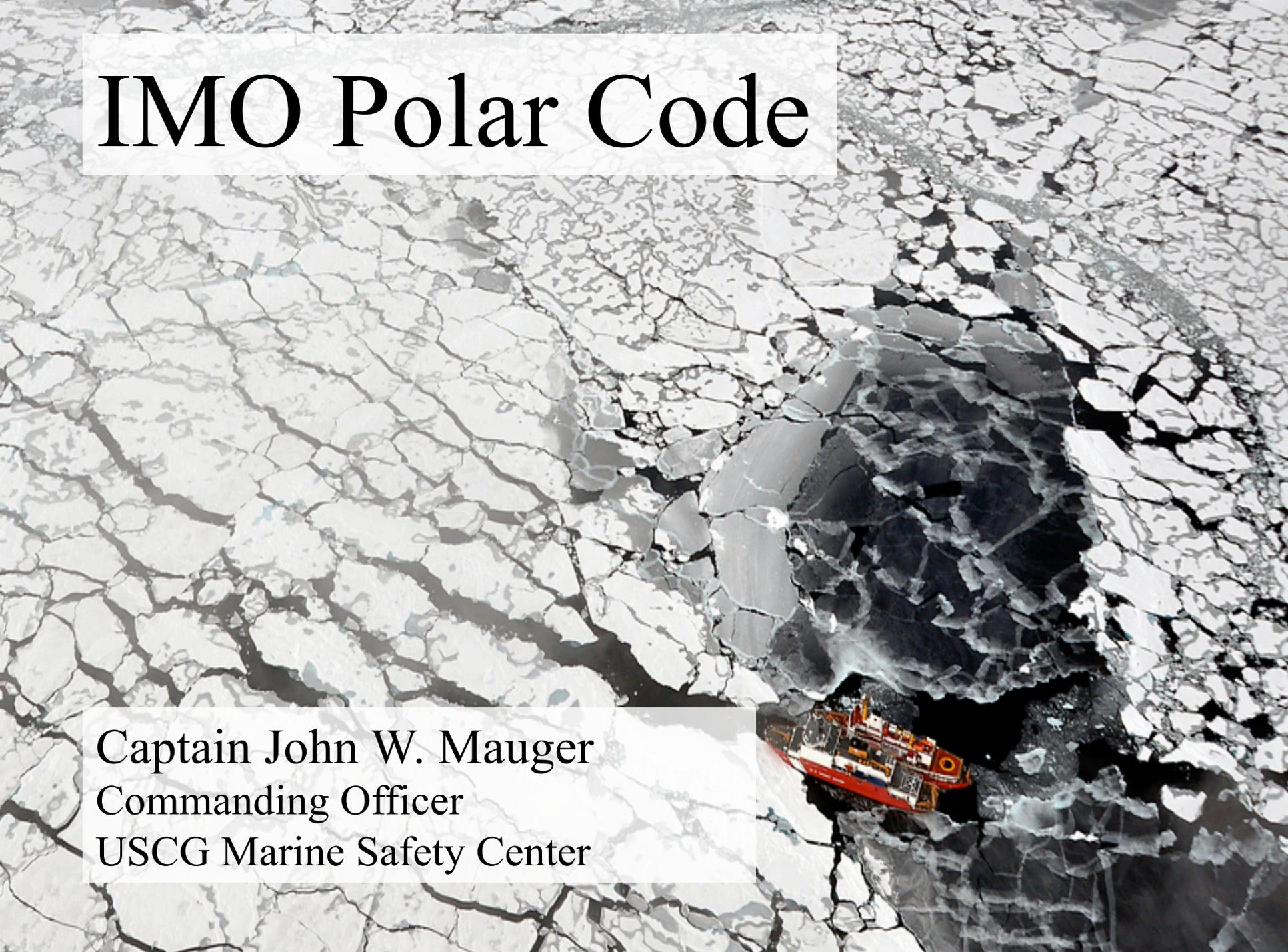


IMO Polar Code

An aerial photograph showing a red and white icebreaker ship navigating through a dense field of sea ice. The ice consists of numerous small, irregular floes separated by dark, narrow channels of open water. The ship is positioned in the lower right quadrant of the frame, moving towards the center. The overall scene is a high-contrast, black and white image with the ship's colors providing a focal point.

Captain John W. Mauger
Commanding Officer
USCG Marine Safety Center



Polar Code Intro & Application



- ❑ **Ship-focused Regs:** for design, construction, manning and operation
- ❑ **Part I: Safety** – Applies to large internat’l cargo, tank & cruise ships; Adopted NOV 2014; entry date JAN 2017.
- ❑ **Part II: Environment** - Applies per MARPOL annexes (“all ships”); Adopted MAY 2015; entry date JAN 2017

Polar Code Boundary – U.S. Arctic



Antarctic Boundary = 60° S

Overview of the IMO

Polar Code:

- Origins in 2002 Ice-covered Guide
- Ship-focused Code
- Additions to SOLAS, MARPOL, & STCW
- Risk Factors:
 - Ice, Low Temperature, High Latitude, Remoteness from Response, Rapidly Changing Severe Weather, Limited Charting, Inexperienced Crew, and Pristine Environment
- Two Parts: Safety and Environment
- Key Topics: Ship Design & Safety Equipment, Risk Assessment, Voyage/Contingency Planning, Crew training & Environmental Impact





IMO Polar Code Part I: Safety



General Chapter

- Certificate & Survey
- Performance Standards
- Operational Limitations



Polar Water Operational Manual

- May use Safety Management System
- Ship's Capabilities & Limitations
- Procedures for Normal Operations
- Contingency Planning
- Icebreaker Escort/Convey (as applicable)



IMO Polar Code Part I: Safety



Ship Structure & Stability

- ❑ Category A – medium first year ice or greater
- ❑ Category B – Thin first year ice to medium first year ice
- ❑ Category C – less than 1/10 ice concentrations
- ❑ Cat. A & B – IACS PC Rules
- ❑ Cat. C – Flag State approval
- ❑ Ice Accretion
 - ❑ Intact Stability Calculations
- ❑ Category A & B
 - ❑ Ice Damage Calculations



IMO Polar Code Part I: Safety



Machinery & Fire Protection

- Protection from
 - Ice/snow/freezing
- Exposed machinery foundations & propeller scantlings
 - IACS Polar Class Rules

Lifesaving Chapter

- Escape Routes
- Evacuation (Equipment)
- Survival Kits (Additional gear for prolonged rescue/evacuation to ice)



IMO Polar Code Part I: Safety



Navigation

- ❑ Receive & Display Ice Conditions
- ❑ Protection of underwater sensors/transducers
- ❑ High Latitude – two non-magnetic & one GNSS heading device

Communications

- ❑ Ships – two-way comms equip w/ Rescue Coord' n Centers
- ❑ Rescue/Lifeboats & Survival Craft– transmitting device & on-scene communications



IMO Polar Code Part I: Safety



Crew Training

- ❑ Familiarization training
 - ❑ All crew members
- ❑ STCW Criteria and Course Curriculum
- ❑ Ice Navigation (Basic and Advanced)

Ice conditions	Tankers	Passenger ships	Other
Ice Free	Not applicable	Not applicable	Not applicable
Open waters	Basic training for master, chief mate and officers in charge of a navigational watch	Basic training for master, chief mate and officers in charge of a navigational watch	Not applicable
Other waters	Advanced training for master and chief mate. Basic training for officers in charge of a navigational watch	Advanced training for master and chief mate. Basic training for officers in charge of a navigational watch	Advanced training for master and chief mate. Basic training for officers in charge of a navigational watch.



IMO Polar Code Part II: Environment



Requirements are in addition to MARPOL requirements (including MARPOL Antarctic Special Area requirements)

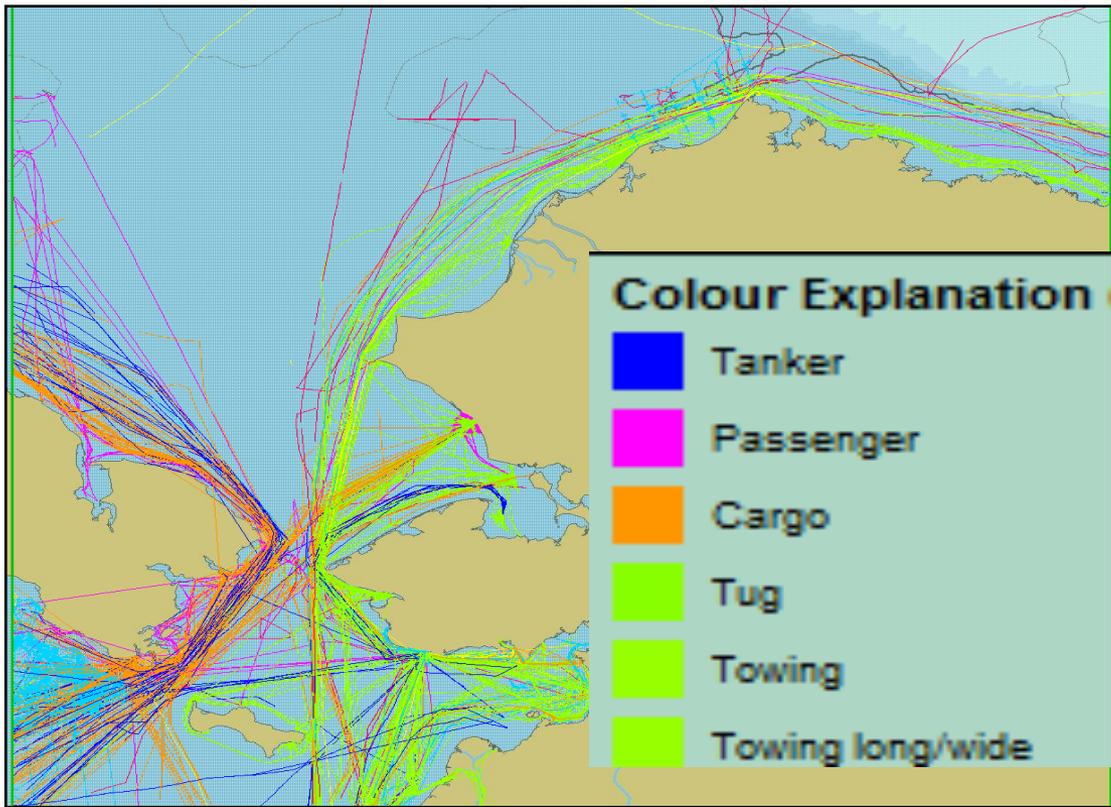
- **Annex I:** Zero discharge oil & oily mixtures
- **Annex II:** Zero discharge of noxious liquid substances
- **Annex IV and V:** New discharge restrictions (distance to ice considerations):
 - Sewage
 - Food waste
 - Cargo residues
- **Annex I & II:** Added tank protection for oil/oily mixtures and NLS tanks



Polar Code Implementation

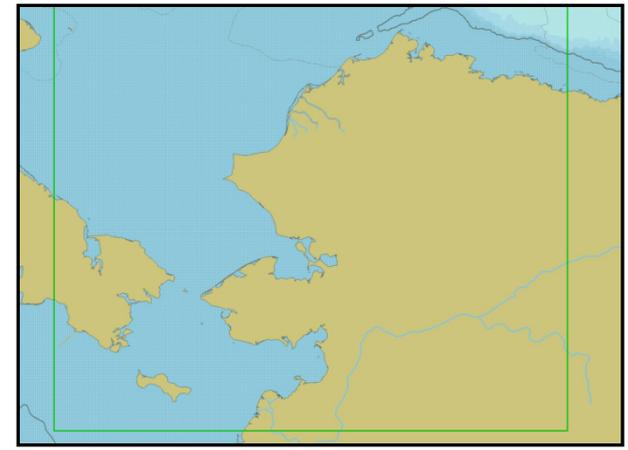


01 JUN to 30 NOV 2013



**2013 Bering Strait
Arctic Vessel Traffic**

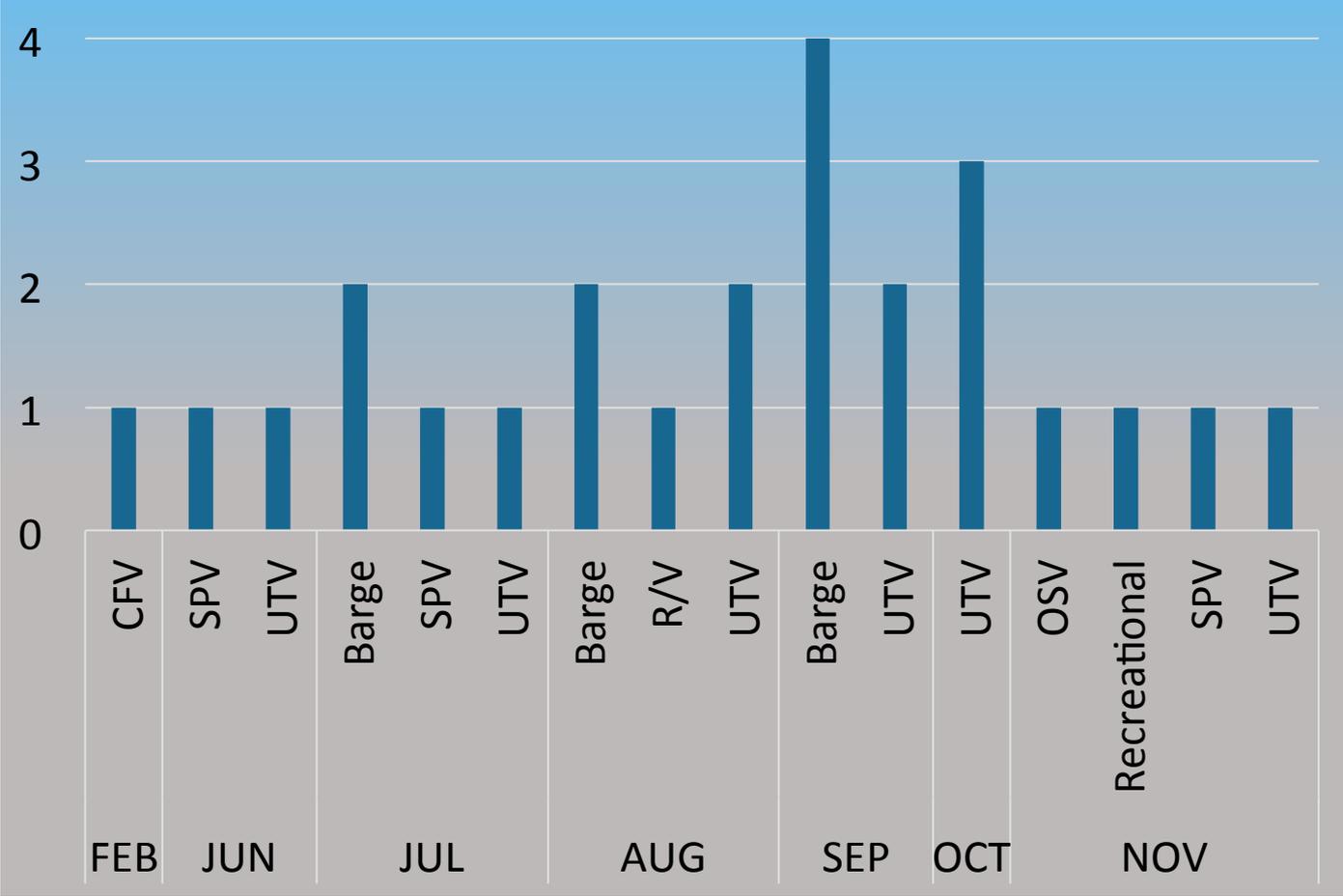
01 JAN to 31 MAY 2013



**AIS Data Courtesy of Marine
Exchange of Alaska**



2011-2013 Vessel Casualties in U.S. Arctic and N. Bering Sea north of 60 N (25 incidents USCG MISLE data)



Compared to region:

Vessel Casualties for Western Alaska (2004-14 MISLE)

- 3451 Casualties
- 85% uninspected of those,
- 75% are CFV
- 10% are UTV

Vessel Types:

- CFV = Fishing
- UTV = Towing
- SPV = Crew boat
- OSV = Support

ICE DAMAGE - Only one of the above incidents involved ice damage; there were no injuries and < \$10K property damage



Implementation/Future Opportunities

USCG Prevention Operations Concept



Implementation

- Standard port state control & U.S. inspection regimes
- Local D17 Policies
- Arctic Waterways Safety Cmte

Systematic and Systemic Issues

- MDA & RCC Communications
- Ice Management & Forecasting
- Hydrographic Surveys



Opportunities Beyond the IMO Polar Code:

- ✓ Uniform Ice-strengthening Standards
 - ❑ Could be developed within IACS
- ✓ Remoteness & High Latitude
 - ❑ MDA and Communications
- ✓ Rapidly Changing Severe Weather
 - ❑ Sensors and Forecasting
- ✓ Ice and Low Temperature
 - ❑ Ice Management and Forecasting
- ✓ Limited Charting
 - ❑ Surveys and Hydrography
- ✓ Environment & Indigenous Culture
 - ❑ IMO /Arctic Council Cooperation





For More Information...



COAST GUARD MARITIME COMMONS

Subscribe to the Coast Guard's newsfeed for mariners!

Thank You!

CAPT John Mauger
john.w.mauger@uscg.mil

COAST GUARD MARITIME COMMONS
THE COAST GUARD BLOG FOR MARITIME PROFESSIONALS

6/18/2014: Coast Guard outlines 2014 Arctic priorities

Posted by LT. Jodie Knox, Wednesday, June 18, 2014

U.S. Coast Guard photo by LT. Jodie Knox

Today, the Vice Commandant of the Coast Guard, [Vice Adm. Peter Neffenger](#) presented the service's 2014 Arctic priorities in support of the [Coast Guard's Arctic Strategy](#) at an Arctic-shipping event sponsored by the Norwegian Embassy.

The Arctic Strategy is built around three strategic objectives: improve awareness, modernize governance and broaden partnerships in the Arctic region.

Navigation & Standards Division
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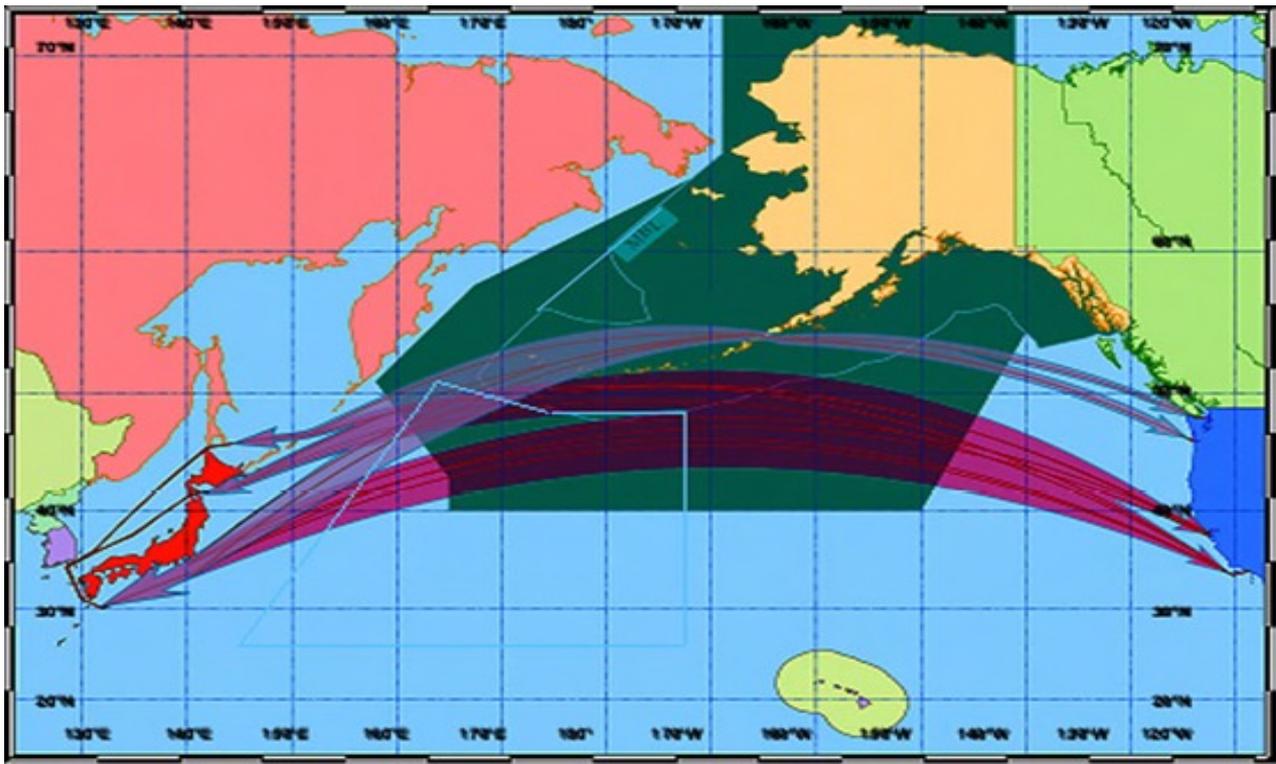
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 Federal Register
 Investigations & Casualty Analysis
 Navigation Systems
 Operating & Environmental Standards
 Ports and Facilities



Polar Code Alignment w/ Arctic Definitions

15 U.S. Code § 4111 - “Arctic” defined

“Arctic” means all United States and foreign territory north of the Arctic Circle and ... all contiguous seas, including the Arctic Ocean and the Beaufort, Bering, and Chukchi Seas; and the Aleutian chain.



If we proposed additional standards for the broader definition of the Arctic...

Vessel Casualties

(2004-2014)

- 3451 Casualties (MISLE)
- 85% are uninspected vessels**
- Of those:
 - 75% are **uninspected fishing**
 - 10% are **uninspected towing**